VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a Minor**,** Industrial permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of a mineral separation plant. This permit action consists of updating the permit to reflect changes in the Water Quality Standards, Guidance Memos, and the VPDES Permit Manual and establishing Total Recoverable Zinc and Selenium limitations. This permit also adds Outfall 003 to the individual permit and establishes effluent limitations for discharge of process wastewater from Outfall 004. SIC Code: 1099.

1. **Facility Name:** Iluka Resources, Inc. – Mineral Separation Plant
   Address: 12468 St. John Church Road
   Stony Creek, Virginia 23882

2. **Permit Number** VA0090981
   Existing Permit Expiration Date: January 26, 2008

3. **Owner Contact**
   Name: Mr. Allan Sale
   Title: President
   Mailing Address & Telephone No: 12472 St. John Church Road
   Stony Creek, Virginia 23882
   434-348-4302

4. **Application Complete Date:** April 24, 2008 (receipt of Outfall 004 Form 2C signature page.)
   Permit Drafted By: Jaime Bauer, Piedmont Regional Office
   Reviewed By: Ray Jenkins **Date:** May 9, 2008

   Public Notice Dates: First Publication Date: May 28, 2008
   Second Publication Date: June 4, 2008
   Public Comment Period: May 28, 2008 through June 27, 2008

5. **OUTFALLS 001, 002, 003, 004**

Receiving Stream Name:	UT to Galley Swamp
Basin:	Chowan and Dismal Swamp
Subbasin:	Chowan River
Section:	2o
Class:	VII
Special Standards:	None
River Mile:	Outfalls 001, 002, 004: 5AXER00.26 Outfall 003: 5AXER000.66

7-Day, 10-Year Low Flows:	0.0 MGD	0.0 cfs
1-Day, 10-Year Low Flows:	0.0 MGD	0.0 cfs
30-Day, 5-Year Low Flows:	0.0 MGD	0.0 cfs
30-Day, 10-Year Low Flows:	0.0 MGD	0.0 cfs
7-Day, 10-Year High Flows:	0.0 MGD	0.0 cfs
1-Day, 10-Year High Flows:	0.0 MGD	0.0 cfs
30-Day, 10-Year High Flows:	0.0 MGD	0.0 cfs
1-Q30 Flows	0.0 MGD	0.0 cfs
Harmonic Mean Flow:	None	

Tidal: No
On 303(d) List: No

See Flow Frequency Memo dated November 15, 2007 (**Attachment 1**)

6. **Operator License Requirements**: **Class III**
(9 VAC 25-790-300)

7. **Reliability Class**: Not applicable
(9 VAC 25-790-70)

8. **Permit Characterization:**

X Private ___ Federal ___ State ___ POTW ___ PVOTW

___ Possible Interstate Effect ___ Interim Limitations in Other Document

9. **Wastewater Flow and Treatment**
Iluka mines heavy mineral sands at locations off site from the Mineral Separation Plant (MSP). The heavy mineral sands are concentrated at the mine sites and then hauled to the MSP where it is separated into the final products of ilmenite and zircon. Slurry of concentrate and water allows the raw product to be transported easily through the MSP. The concentrate is then separated by utilizing the electrostatic and magnetic properties of the minerals. Prior to each process, the slurry is dewatered with belt filters and a fluid-bed dryer. Process Pond 1 receives the used process water from the MSP. A weir separates Process Pond 1 from Process Pond 2; and water from Process Pond 2 is re-circulated back to the MSP. Process Pond 1 also receives water from the Combined Sediment and Storm Water Pond.

Zircon Finishing Plant - Outfall 001

The zircon is moved to the Zircon Finishing Plant (ZFP), where it undergoes a series of rinses to remove the residual conductive material. The process water used at the ZFP is sent to the Zircon Finishing Effluent Treatment Plant (ETP) to reduce the sulfate, iron and trace metals in the wastewater stream. The wastewater is treated and a large percentage reused. Treated effluent water from the ETP is used in all processes of the ZFP except at the final rinse where clean water from Process Pond 2 is used. Not all of the wastewater processed by the ETP is reused in the plant; therefore a VPDES permit is necessary to authorize the discharge of the process water.

The ETP facility is designed for a wastewater flow of 285 gpm (0.41 MGD) and consists of the following:

- Neutralization: The acidic wastewater is mixed with a hydrated lime slurry (2 to 5 gpm) and underflow from the thickener (97 gpm) in the gypsum mixing tank. The gypsum mixing tank discharges to the neutralization tank (a high carbon steel tank having a working capacity of 5,500 gallons; approximately 15 minutes detention time). A pH indicator is installed to compare the pH of the effluent to a set between 6.0 and 9.0 S.U. If the pH falls below the set point, additional lime slurry is fed into the Neutralization tank.

- The neutralized wastewater is pumped to the gypsum clarifier/thickener (made of high carbon steel and having a working capacity of 136,800 gallons; approximately 5.7 hours detention time). Suspended solids accumulate on the floor of the thickener and are then moved to sludge well. The clarified water is discharged to the existing Effluent Turkey

Nest Pond for temporary storage, from which it is pumped to the existing Effluent Pond.

- Outfall 001 is pumped discharge from the Effluent Pond. The pumping rate will not exceed 100 gpm and discharge will not exceed 60,000 gallons per day.

- The sludge from the clarifier/thickener will be pumped to a vacuum drum filter, which will dewater the sludge to a minimum 65% solids. The dewatered sludge will be hauled to one of Iluka's mining sites to be used for reclaim efforts.

- All runoff from the ZFP treatment area is directed to the Effluent Turkey Nest Pond.

Outfalls 002 and 003
The Storm Water Pond collects run-off water from storm events at the MSP and discharge it at Outfall 002. The Admin Storm Water Pond collects run-off at the north end of the site and discharges at Outfall 003. Outfalls 002 and 003 discharge water collected from the site during and after storm events, but they are not defined as storm water outfalls in Section IN-4 of the VPDES Permit Manual or the Industrial Storm Water General Permit. Storm water at metal mining mills is specifically classified as that which does not have contact with material piles. Therefore, it is inferred that storm event water that does come in contact with material piles is process water. The facility currently stores material piles in the drainage area for the Storm Water Pond, and they plan to begin storing material piles that during storm events would drain into the Admin Storm Water Pond after issuance of this permit.

Storm Water Pond - Outfall 002
Iluka is proposing to alter the configuration of the plant which will occur prior to or concurrently with the permit re-issuance. The reconfigured pond will be identified as the Storm Water Pond. Prior to any changes, two ponds separated by a berm exist at the south-east corner of the site previously identified as Retention Pond 3 and Sediment Pond. Retention Pond 3 drains a plant area of approximately 7 acres (approximately 3 acres of which has an impermeable surface). Retention Pond 3 discharges at Outfall 002 and was included in the initial issuance of the VPDES permit for this facility. The Sediment Pond discharges to an outfall that is permitted under an Industrial Storm Water General Permit (VAR051217).

The facility is proposing to join the two ponds by breaching the berm that currently separates them. The current Sediment Pond outfall will be sealed with sediment dredged out when combining the two ponds. After the combination of the ponds is complete, water from both will be discharged at Outfall 002.

Admin Storm Water Pond (Proposed) - Outfall 003
Storm water near the administrative office buildings is collected in the Admin Storm Water Pond. The Admin Storm Water Pond is covered by a general permit for industrial storm water discharge (VAR051217). Iluka is requesting coverage of Outfall 003 for storm water discharge under the individual permit. The general permit will be terminated after re-issuance of this individual permit. The pond also has two non-storm water inputs that include groundwater pumped from the Admin Building's French drain system and the discharge from non-contact cooling water for the laboratory's XDF machine. No additions are made to the cooling water. Permit limits and monitoring for Outfall 002 address the parameters of concern listed in the cooling water general permit.

Termination of VAR0051217
After the proposed changes above are completed, the facility will no longer need coverage under the Industrial Storm Water general permit. VAR051217 can then be terminated.

Outfall 004
Iluka is also proposing to add Outfall 004 that will allow the occasional discharge of treated

process water from Process Pond 2 when the pond becomes full. As previously described, mineral sand concentrate is moved around the plant by mixing it with water to create a slurry. Once the concentrate has arrived at its destination, it is pumped to the filter feed cyclones and a belt filter for dewatering. The process water is then pumped to Process Pond 1 and eventually to Process Pond 2 for reuse. Process wastewater will discharge by flowing down a concrete spillway and then will enter a culvert that will be installed under the access road on the east side of the pond. The water will then pass through the existing culvert to an onsite ditch. The discharge will exit the site at the same location as Outfalls 001 and 002. The permittee estimates that the discharge rate will be 1,000 gallons per minute (1.4 MGD-maximum).

Table 1: Wastewater Summary

Outfall	Description	Wastewater Source		Flow
001	Effluent Pond	Zircon Finishing Effluent Treatment Plant	Neutralization Clarification/Sludge Thickening Effluent Water Pond	60,000 gpd
002	Storm Water Pond	Contaminated Runoff Groundwater	Settling Pond	Variable
003	Admin Storm Water Pond	Contaminated Runoff Groundwater	Settling Pond	Variable
004	Process Pond 2	Process Water used for transporting mineral concentrate	Recycled water pond-no treatment other than settling occurring	1.4 mgd

(See **Attachment 2** for facility diagrams)

10. **Sewage Sludge Use or Disposal**:
The dewatered sludge from the ZFP will be hauled to one of Iluka's mining sites to be used for reclaim efforts.

11. **Discharge Location Description***:*
The facility discharges to a dry ditch to Galley Swamp. See **Attachment 3** for the USGS Stony Creek Quadrangle topographic map**.**

12. **Material Storage**:
Raw Mineral Concentrate Feed. The storage area drains to Storm Water Pond.

Finished Mineral Sand Products. Finished product is stored in covered bins prior to loading in railcars for shipment. Rainwater should not come in contact with the finished product. The loading area drains to Storm Water Pond.

Tailings, including staurolite, and boneyard. Drainage from the tailings and runoff from the tailings area are captured in the Storm Water Pond where it is reused in the separation process or discharged at Outfall 002.

Sulfuric Acid. 5,000 gallon polyethylene above ground tank. The tank is located in the drainage area to Storm Water Pond.

Off-Road Diesel Fuel and Dryer Fuel. Diesel fuel in stored in a 2,000 gallon above ground tank. Immediately to the north of the 2,000 gallon tank is a 500 gallon double steel walled tank containing Regular Unleaded Gasoline. Dryer fuel (#2 fuel oil, #4 fuel oil, or "on-spec" used oil) is stored in a 20,000 gallon above ground tank. Both tanks are located in the Tank

Farm and are equipped with welded steel secondary containment structures and rain shields. The Tank Farm is currently located in the drainage area to the Storm Water Pond (Outfall 002).

Small amounts of various chemicals used in equipment maintenance and cleaning are stored in three primary locations with the main processing building. These materials do not pose a threat of release.

13. **Ambient Water Quality Information**:
Ambient water quality data are not needed because the receiving stream flows are zero at the theoretical low flows used to determine the need for effluent limitations.

14. **Antidegradation Review & Comments**: **Tier 1 X Tier 2 _____ Tier 3 _____**
The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. The receiving stream, an UT to Galley Swamp, is considered to be a Tier 1 water body because it is a dry ditch. In 2006, the unnamed tributary was assessed as being part of the Rowanty Creek watershed. The creeks were considered fully supporting of the Recreation, Aquatic Life and Wildlife uses. Fish Consumption Use was not assessed.

15. **Site Inspection:** October 24, 2007 by Jaime Bauer and Ray Jenkins.
See **Attachment 4**.

16. **Effluent Screening & Limitation Development (Attachment 5)**:

Outfall 001

PARAMETER	BASIS
Flow (MGD)	NL- Monitoring Only
pH	Water Quality Standards
Total Suspended Solids	Technology Based Effluent Limit 40 CFR 440.54(b)
Total Hardness	NL – Monitoring Only
Total Recoverable Selenium	Water Quality Standards
Total Recoverable Zinc	Technology Based Effluent Limit 40 CFR 440.54(b)
Whole Effluent Toxicity (WET) NOAEC *Ceriodaphnia dubia*	Water Quality Standard

Monitoring data for all pollutants (except radioactive pollutants) reported on the Form 2C as present in the effluent and measured in quantifiable levels, were evaluated in the STATS.exe program to determine if permit limitations were necessary. The discharge at Outfall 001 is limited to less than 4 consecutive days; therefore, chronic reasonable potential evaluations

were not performed. All other pollutants reported as below acceptable quantification levels are considered absent for purposes of this evaluation. Radioactive pollutants are evaluated for concerns to human health along with other parameters in a table in Attachment 5(a).

TSS: This facility is subject to the technology based NSPS requirements for Ore Mining and Dressing Point Sources – Titanium Ore (40 CFR 440.54(b) which limits effluent TSS concentrations to 20 mg/L average of daily values for 30 days and 30 mg/L for any one day maximum concentration. No compliance schedule is provided in the permit for the TSS limit because the Effluent Limit Guidelines do not allow for a compliance schedule.

pH: A pH range of 4.3 – 9.0 Standard Units is assigned to all Class VII waters per the Virginia Water Quality Standards, 9 VAC 25-260-50. 40 CFR 440.54(b) also contains a limit on pH from 6.0 to 9.1 S.U. The permit limitations are based on the water quality limitations since they are more restrictive.

Selenium: Selenium was analyzed using MIX.exe, MSTRANTI.xls, and STATS.exe. Outfall 001 discharges to a dry ditch so all MSTRANTI input data for streams are equal to zero and 100% mix is assumed. The WLA_a for selenium as calculated by MSTRANTI was input into the STATS.exe program along with a QL of 0.003 mg/L. The permit restricts discharge to less than 4 days of continuous discharge; therefore the chronic WLA was not evaluated. A selenium permit limit of 0.020 mg/L (20 ug/L) based on acute toxicity was calculated as necessary. See **Attachment 5(a)** for calculation information. EPA requires that metal effluent limitations to be in terms of "total recoverable" rather than "total dissolved." Total dissolved selenium monitoring results were evaluated and used in establishing permit limitations. A 1 to 1 ratio of total dissolved to total recoverable is assumed. Agency guidance recommends once per month sampling for industrial facilities with a continuous process wastewater discharge. A sampling frequency of once per quarter for selenium was chosen because the facility does not have a continuous discharge of process water.

Zinc: This facility is subject to the technology based NSPS requirements for Ore Mining and Dressing Point Sources – Titanium Ore (40 CFR 440.54(b) which limits effluent zinc concentrations to 0.5 mg/L average of daily values for 30 days and 1.0 mg/L for any one day maximum concentration. No compliance schedule is provided in the permit for the zinc limitation because the Effluent Limit Guidelines does not allow for a compliance schedule. EPA requires that metal limitations to be in terms of "total recoverable" rather than "total dissolved."

WET NOAEC: Effluent toxicity was evaluated using LC_{50}data from seven tests performed in the previous permit cycle, the spreadsheet WET_LIM10.xls, and STATS.exe. Based on effluent information the WET acute WLA was calculated to be 0.3. The WLA and LC_{50} values (converted to TU_a) were input into the STATS.exe program. All data that was <1 TU_a was entered into STATS as a value of 1. The data output indicates that a toxicity limit is needed in the permit. The water toxics program contact provided permit language. See **Attachment 8** for data tables, WET_LIM10.xls spreadsheet, and STATS.exe data output.

Outfalls 002 and 003

PARAMETER	BASIS
Flow	NL- Monitoring Only
pH	Water Quality Standards
TSS	Best Engineering Judgment
Turbidity	NL – Monitoring Only
Hardness as CaCO3	NL – Monitoring Only
Dissolved Antimony	NL – Monitoring Only

Dissolved Arsenic	NL – Monitoring Only
Beryllium	NL – Monitoring Only
Dissolved Cadmium	NL – Monitoring Only
Dissolved Copper	NL - Monitoring Only
Dissolved Iron	NL - Monitoring Only
Dissolved Lead	NL - Monitoring Only
Dissolved Manganese	NL - Monitoring Only
Dissolved Mercury	NL - Monitoring Only
Dissolved Nickel	NL - Monitoring Only
Dissolved Selenium	NL - Monitoring Only
Dissolved Silver	NL – Monitoring Only
Dissolved Zinc	NL - Monitoring Only

Even though discharges from Outfalls 002 and 003 are considered process water, each has a discharge that is characteristic of a storm water discharge in that the discharge is only created due to storm events. Storm water evaluation techniques were used in evaluating pollutants discharged at Outfalls 002 and 003 and establishing monitoring for toxic pollutants.

TSS limitations for both Outfalls 002 and 003 have been established by best engineering judgment and are based on effluent limitations from the non-metallic mineral processing general permit. Activities and material at non-metallic mineral processing sites are similar to the metal processing sites. Both have stock piles of raw, intermediate, finished, and waste material that will contribute solids to the collection of water from storm events. Because of these similarities, a TSS limit of 30 mg/L average, and 60 mg/L maximum from the non-metallic mineral processing general permit were included for Outfalls 002 and 003. The 30/60 mg/L is more stringent than the 100 mg/L monitoring benchmark listed under the storm water guidance found in the VPDES Permitting Manual and discussed below. As previously discussed, the water that comes in contact with material piles at metal mining sites is considered process water. While the storm water procedures were used for establishing monitoring for other pollutants, using the 100 mg/L as a benchmark for TSS would be considered backsliding from the original VPDES permit issuance.

Monthly monitoring for TSS and pH is being required since the collected water is by definition process water. The facility is being required to monitor monthly at Outfall 001 for TSS; therefore the monthly TSS and pH monitoring at Outfalls 002 and 003 should not be burdensome to the facility. Since a discharge is only created because of rain events, there will be months when no discharge occurs. In such cases, the facility will report “No Discharge” for Outfalls 002 and 003.

All other pollutants for Outfalls 002 and 003 were evaluated using storm water evaluation procedures. According to current agency guidance, a pollutant-by-pollutant comparison of storm water effluent data is to be compared to the acute toxicity water quality criteria in the Water Quality Standards. The Water Quality Standards lists the limitations for many metals and other toxics in a form that requires other factors such as hardness, dilution, temperature, etc., to be considered. MSTRANTI is used to compute an acute toxicity standard for certain pollutants by taking the aforementioned criteria into account, then producing a number representing a concentration for each pollutant that, at a minimum, must be maintained to protect designated water quality. See **Attachment 5(b)** for MSTRANTI, monitoring data, and acute WLA comparison tables. Screening criteria for industrial storm water discharges have been established at 2 times the acute criteria (calculated with MSTRANTI) based upon best professional judgment. Data submitted by the permittee (on either an EPA Form 2F or on a DMR) which are above these levels result in the establishment of a Storm Water Management Evaluation for that specific pollutant.

As shown in Attachment 5(b), the test results at Outfall 002 for cadmium, copper, lead, nickel, selenium, silver, and zinc are greater than 2 times the acute standards. In most circumstances, this is the prompt for the facility to perform a Storm Water Monitoring Evaluation, including toxicity testing. However, in this circumstance many of the test result values were reported as greater than a QL and the QL is a number greater than 2 times the acute standard. Therefore, it can not be determined if the test result value truly is above or below 2 times the acute standard. The permit will require the facility to monitor the pollutants over the five year term of this permit to collect additional data to evaluate rather than assume that the actual value is greater than 2 times the acute standard. Also, the data provided by the facility is more than 7 years old. Newly collected data should provide a better evaluation of what pollutants are present in the discharged water. Also, since Outfall 002 will now result in the discharge of waters from two ponds rather than just one, the monitoring data will accurately reflect the characteristics of Outfall 002's discharge.

Evaluation of monitoring data for pollutants discharged at Outfall 003 indicates that the following pollutants exceed 2 times the acute standard for the pollutant of interest: cadmium, copper, and (potentially) silver. Data includes sampling results from 2005, 2006, and 2007, and show a lot of variability. Also, the QL for silver is greater than 2 times the standard; therefore the actual pollutant concentration cannot be a compared to the 2 times the acute standard. At this time, a storm water evaluation plan is not being required as part of the permit because the permittee is reconfiguring Outfall 002 and proposing site changes that impact Outfall 003. The permittee will be required to perform annual monitoring for the benchmark pollutants at Outfall 003 like those described for Outfall 002. Additional monitoring will provide more data for evaluation.

Although discharges from Outfalls 002 and 003 are not considered storm water, the storm water procedures were referenced in determining monitoring and limitations for toxic parameters since both outfalls have characteristics similar to storm water outfalls. Analytical (benchmark) monitoring for parameters as specified for particular industrial sectors were included in the permit. The facility falls into the classification of Sector G – Metal Mining (Ore Mining and Dressing) under miscellaneous metal ores (SIC 1099). The analytical monitoring is conducted annually, at a minimum, to determine the effectiveness of the storm water Best Management Practices (BMPs). If data conclusively demonstrates that a certain pollutant is not present in the runoff above the benchmark concentrations, the monitoring requirement can be re-evaluated during the next permit cycle. The Storm Water Discharge Evaluation table for Outfall 002 indicates that the concentration of mercury from Outfall 002 is less than the benchmark values; however, all other pollutant concentrations exceed benchmark values. Monitoring for all pollutants of concern for which there are benchmark values is being required in this permit since data submitted by the facility is more than 7 years old. Newly collected data should provide a better evaluation of what pollutants are present in the discharged water.

At Outfall 003, the average concentrations for all pollutants of interest are below the benchmark concentrations with the exception of cadmium, copper, iron, and silver. At this time, annual monitoring for all pollutants of interest will be required in the permit. If additional data collection demonstrates that one or more of those pollutants is absent, then the monitoring requirements may be reconsidered during the next permit cycle.

As previously mentioned, there are Effluent Limit Guidelines that apply to Outfall 001 for Ore Mining and Dressing Point Sources – Titanium Ore. The NSPS (40 CFR 440.54(b)) applies to the dressing and beneficiating processes. Stocked material piles located at the site are not included in the performance standard, and the pollutant limitations listed in the Effluent Limit Guideline do not apply at Outfalls 002 and 003.

Outfall 004

PARAMETER	BASIS
Flow (MGD)	NL- Monitoring Only
pH	Water Quality Standards
Total Suspended Solids	Technology Based Effluent Limit 40 CFR 440.54(b)
Total Hardness	NL – Monitoring Only
Total Recoverable Zinc	Technology Based Effluent Limit 40 CFR 440.54(b)
Whole Effluent Toxicity (WET) Test: NOAEC *Pimephales promelas* and *Ceriodaphnia dubia*[2]	NL- Monitoring Only

Monitoring data for all pollutants (except radioactive pollutants) reported on the Form 2C as present in the effluent and measured in quantifiable levels, were evaluated in the STATS.exe program to determine if permit limitations were necessary. The discharge at Outfall 004 is limited to less than 4 consecutive days; therefore, chronic reasonable potential evaluations were not performed. All other pollutants reported as below acceptable quantification levels are considered absent for purposes of this evaluation. Radioactive pollutants are evaluated for concerns to human health along with other parameters in a table in Attachment 5(c).

TSS: This facility is subject to the technology based NSPS requirements for Ore Mining and Dressing Point Sources – Titanium Ore (40 CFR 440.54(b) which limits effluent TSS concentrations to 20 mg/L average of daily values for 30 days and 30 mg/L for any one day maximum concentration. No compliance schedule is provided in the permit for the TSS limit because the Effluent Limit Guidelines do not allow for a compliance schedule. A copy of the ELG is included in Attachment 5(a).

pH: A pH range of 4.3 – 9.0 Standard Units is assigned to all Class VII waters per the Virginia Water Quality Standards, 9 VAC 25-260-50. 40 CFR 440.54(b) also contains a limit on pH from 6.0 to 9.1 S.U. The permit limitations are based on the water quality limitations since they are more restrictive.

Zinc: This facility is subject to the technology based NSPS requirements for Ore Mining and Dressing Point Sources – Titanium Ore (40 CFR 440.54(b) which limits effluent zinc concentrations to 0.5 mg/L average of daily values for 30 days and 1.0 mg/L for any one day maximum concentration. No compliance schedule is provided in the permit for the zinc limitation because the Effluent Limit Guideline does not allow for a compliance schedule. EPA requires that metal limitations to be in terms of "total recoverable" rather than "total dissolved."

See Attachment 5(c) for Process Pond 2 data, MSTRANTI, and STATS.exe evaluations.

17. **Antibacksliding Statement**: All limitations are at least as stringent as in the previous permit.

18. **Special Conditions:**

B.1. **Whole Effluent Toxicity (WET)** Limit and Monitoring Requirements – Outfall 001
Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. This industrial category of facilities is identified in agency guidance for inclusion in the toxic management program. Toxicity monitoring data required from the permit expiring on

January 28, 2008 were used to determine a WET limit of NOAEC = 100% is necessary to protect water quality. Only acute monitoring is required because discharge is restricted by special condition B.9.to no more than three consecutive days. After three consecutive calendar days, the discharge must cease for a minimum of 24 hours before discharge may resume. The discharge, by design, is not continuous. For purposes of this permit, the reference to three consecutive calendar days cannot be interpreted to mean a continuous discharge over a three day period, but any discharge on three consecutive calendar days. (**Attachment 8** – Whole Effluent Toxicity Analysis for Outfall 001)

B.2. **Whole Effluent Toxicity (WET)** Limit and Monitoring Requirements - Outfall 004
Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. This industrial category of facilities is identified in agency guidance for inclusion in the toxic management program. Only acute monitoring is required because discharge is restricted by special condition B.9.to no more than three consecutive days. After three consecutive calendar days, the discharge must cease for a minimum of 24 hours before discharge may resume. The discharge, by design, is not continuous. For purposes of this permit, the reference to three consecutive calendar days cannot be interpreted to mean a continuous discharge over a three day period, but any discharge on three consecutive calendar days.

B.3. **Notification Levels:**
Rationale: This special condition is required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

B.4. **O&M Manual Requirement**
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-190 E; Code of Virginia § 62.1-44.16, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this.

B.5. **Licensed Operator Requirement**
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 C and The Code of Virginia § 54.1-2300 et seq, Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), requires licensure of operators.

B.6. **Materials Handling/Storage**
Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-50 A. Prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia § 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

B.7. **Groundwater Monitoring**
Rationale: State Water Control Law section 62.1-44.21 authorizes the Board to request information needed to determine impact on state waters. Groundwater monitoring for parameters of concern will indicate whether lagoon seepage is resulting in violations to the State Water Control's Groundwater Standards.

Evaluation of the ground water data submitted since 2004 indicates that there appears to be some significant increases in concentrations of some parameters at some wells in comparison to the up-gradient well. All data points measured, with the exception of total dissolved solids, do not exceed the ground water standard for

the parameter. Monitoring shall remain on a quarterly basis and monitoring results shall be submitted to the DEQ, Piedmont Regional Office, on 10th of the month for the following the quarter.
(See **Attachment 7** for Ground Water Monitoring Data)

Language is being added to the condition to require the facility to revise the ground water monitoring plan within 60 days of the effective date of this permit reissuance to reflect only the wells that were installed and to update the parameters that are monitored. The current plan requires monitoring of sulfates, iron, and sodium at down gradient wells, but not at up-gradient wells or the background well. There is no way to evaluate these pollutants to determine if a significant increase in the pollutants is occurring in groundwater due to the activities at the facility. The approved plan is an enforceable part of the permit. Any changes to the plan must be submitted for approval to the Piedmont Regional Office.

B.8. **Compliance Reporting**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

QL's were established using agency guidance that states that QL's for pollutants in Part I A should be established based on the lesser of $0.4WLA_a$ or $0.6WLA_c$ but not less than the lowest DEQ certified metal specific method QL. QL's for the pollutants common among one or more discharges were compared and the lowest chosen as the QL for the compliance reporting condition. For outfalls 001 and 004, the QL was calculated using 0.4WLAa since the discharges are limited to 3 or less days, therefore the chronic standards do not apply. For those pollutants at Outfalls 002 and 003, two times the acute WQS was calculated as the QL since two times the acute WQS is the threshold for storm water evaluation. Only those pollutants with monitoring and/or limits at an outfall were considered for purposes of this exercise. Below is a summary of QL determination:

Pollutant	Outfall 001 (0.4 x WLAa)	Outfall 002 (2 x Acute WQS)	Outfall 003 (2 x Acute WQS)	Outfall 004 (0.4 x WLA_a)	QL in Compliance Reporting Condition
Antimony **	-	-	-	-	640 ug/L
Arsenic	-	680	680	-	680 ug/L
Cadmium	-	1.6	1.6	-	1.6 ug/L
Copper	-	7.3	7.3	-	7.3 ug/L
Iron**	-	-	-	-	1000 ug/L
Lead	-	41	41	-	41 ug/L
Manganese**	-	-	-	-	1000 ug/L
Mercury	-	2.8	2.8	-	2.8 ug/L
Nickel	-	110	110	-	110 ug/L
Selenium	0.4*20=8.0	40	40	0.4*20=8.0	8.0 ug/L
Silver	-	0.64	0.64	-	0.64 ug/L
Zinc	0.4*380=152	36	36	0.4*380=152	36 ug/L

**No acute water quality standard. QL is based on storm water benchmark monitoring cutoff concentrations found in Attachment 5(b).

B.9. **Limitation on Discharge**

Rationale: Outfall 001 and 004 has a non-continuous discharge to which the chronic waste load standards do not apply. To ensure that chronic toxicity does not occur, after three consecutive calendar days, the facility must cease discharging for a

minimum of 24 hours. For purposes of this permit, the reference to three consecutive calendar days cannot be interpreted to mean a continuous discharge over a three day period, but any discharge on three consecutive calendar days.

B.10. **Total Maximum Daily Load (TMDL) Reopener**
Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream and is included in all permits. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limitations and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act. This reopener is included in all permits.

B.11. **Water Quality Criteria Reopener**
Rationale: VPDES Permit Regulation, 9 VAC 25-31-220 D requires effluent limitations to be established which will contribute to the attainment or maintenance of the water quality standards.

C. **Compliance Schedules: Total Recoverable Selenium**
Rationale: The VPDES Permit Regulation at 9 VAC 25-31-250 allows for schedules of compliance, when appropriate, which will lead to compliance with the Clean Water Act, the State Water Control Law and regulations promulgated under them.

The Virginia Water Quality Standards, 9 VAC 25-260, and the corresponding Water Quality Effluent Limitations analyses indicated the need to establish effluent limitations for selenium. As this is a new and more stringent effluent limitation, it is appropriate to allow a period of time for the permittee to achieve compliance.

19. **General Storm Water Special Conditions (Part D)**
Storm Water Pollution Prevention Plan (Part E)
Sector-Specific Storm Water Pollution Prevention Plan Requirements (Part F)
Rationale: VPDES Permit Regulation, 9 VAC 25-31-10 defines discharges of storm water from industrial activity in 9 industrial categories. 9 VAC 25-31-120 requires a permit for these discharges. The Storm Water Pollution Prevention Plan requirements of the permit are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limitations are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.

20. **Part II, Conditions Applicable to All Permits**
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. **NPDES Permit Rating Work Sheet:** Total Score **60** **(Attachment 6)**

22. **Changes to Permit:**

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limitations Changed		Reason	Date
		From	To	From	To		
001	TSS	-	-	30	20 mg/L	Effluent Guideline Limit was not applied in the original issuance of the permit.	12/07
	TSS	-	-	60	30 mg/L	Effluent Guideline Limit was not applied in the original issuance of the permit.	12/07
	Selenium (monthly)	-	1/Quarter	-	20 ug/L	Evaluation of toxicity data indicates the need to establish a limitation for selenium.	12/07
	Zinc (montlhly)	-	1/Quarter	-	0.5 mg/L	Effluent Guideline Limit was not applied in the original issuance of the permit.	12/07
	Zinc (max)	-	1/Quarter	-	1.0 mg/L		
	Whole Effluent Toxicity (WET) Test: Acute 48 hr static *Ceriodaphnia dubia*	-	1/Quarter	-	1.0 TU_a	Toxicity data analysis indicated need for limit	1/08
	Footnote added: Significant Figure Part I.A.1 Table					Updated language to reflect current agency guidance	12/07
	Ammonia-N	1/Quarter	-	-	-	Five years of monitoring data suggest that the facility is meeting the WQS for these parameters. Monitoring for these parameters is being discontinued.	12/07
	Hexavalent Chromium	1/Quarter	-	-	-		
	Dissolved Lead	1/Quarter	-	-	-		
	Dissolved Copper	1/Quarter	-	-	-		
	Footnote removed: Reference to Special Condition C.2.						12/07
003	Flow	-	1/Month	-	-	New outfall	12/07
	pH	-	1/Month	-	6.0-9.0 S.U.	New outfall	12/07
	TSS (monthly)	-	1/Month	-	30.0	New outfall	12/07
	TSS (max)	-	1/Month	-	60.0	New outfall	12/07
002 & 003	**Monitoring:** Turbidity Hardness Dissolved Antimony Dissolved Arsenic Beryllium		1/Year			002 and 003 have characteristics similar to storm water outfalls. Monitoring to evaluate potential pollutant impact as specified in agency guidance for storm water	2/08

	Dissolved Cadmium Dissolved Copper Dissolved Iron Dissolved Lead Dissolved Manganese Dissolved Mercury Dissolved Nickel Dissolved Selenium Dissolved Silver Dissolved Zinc					discharges.	
004	Flow	-	1/Month	-	-	New outfall evaluation indicated need for limitations for pollutants based on water quality and effluent limit guidelines.	4/08
	pH	-	1/Month	-	6.0-9.0		
	TSS	-	1/Month	- -	20 mg/L 30 mg/L		
	Zinc	-	1/Quarter	-	0.50 mg/L 1.0 mg/L		
	Whole Effluent Toxicity (WET) Test: NOAEC *Pimephales promelas*[2] *and Ceriodaphnia dubia*[2]	-	1/Quarter	-	-	New outfall monitoring for protection of aquatic life and human health.	4/08
	Significant figure footnote.						

Special Condition Changes:

Previous Condition Number	New Condition Number	Rationale:	
Part I. B.	-	Monitoring for Water Quality Standards: Removed to reflect current agency policy per June 2003 WPM Meeting Minutes.	12/07
Part I.C.2.	-	Dissolved Metals Monitoring at Outfall 001: Removed. Original permit required dissolved metals monitoring since no information was available. Data collected has been used as a baseline in the creation of permit limitations and monitoring requirements in this new permit.	12/07
Part I.C.1	Part I.B.1.	Updated language to reflect current agency guidance; Added WET Limit based on data analysis. Changes to the WET condition and specific WET permit language in the permit are per the advice of the DEQ Central Office TMP contact and can be found in **Attachment 8**. WET test acceptable results previously were LC50 greater than or equal to 100%. In this permit acceptable WET test results are NOAEC = 100%. Previous permit required acute toxicity test on two species. This permit re-issuance only requires acute toxicity testing on the more sensitive species per the advice of the DEQ Central Office TMP contact.	12/07
-	Part I.B.2.	Acute WET testing added for proposed Outfall 004.	4/08
Part I.C.3	Part I.B.3	Renumbered.	12/07
Part I.C.4.	Part I.B.4	Renumbered. Updated language to reflect current agency guidance and PRO policy.	12/07

Part I.C.5	Part I.B.5	Renumbered.	12/07
Part I.C.6	Part I.B.6	Renumbered.	12/07
Part I.C.7	-	Removed. Form 2D data has been submitted.	12/07
Part I.C.8.	Part I.B.7	Renumbered. Updated permit condition to require an updated GWM plan that accurately identifies the on site monitoring wells and to add additional pollutants to be monitored at down gradient wells that have historically been monitored at up gradient wells.	12/07
Part I.C.9	Part I.B.8	Renumbered. Included quantification limit for selenium and removed Chromium VI quantification limit.	12/07
Part I.C.10	Part I.B.9	Renumbered and Added Outfall 004 language. Discharge at Outfalls 001 and 004 restricted to three consecutive days instead of previous constraints of four consecutive days. Chronic toxicity is a four day average concentration; therefore to avoid chronic toxicity impacts, discharges need to be limited to less than four days.	12/07
-	Part I.B.10	TMDL Reopener: Updated language to reflect current agency guidance.	12/07
-	Part I.B.11	Water Quality Criteria Reopener: Language added to reflect current agency guidance.	4/08
-	Part I.C.	Compliance Schedule: Reflects new and revised effluent limitations for selenium.	12/07
Part I.C.	Part I.D.	Renumbered. Updated language to reflect current agency guidance	12/07
Part I.D.	Part I.E.	Renumbered. Updated language to reflect current agency guidance. Language in Condition I.E.1 in this permit deviates from agency boilerplate language. This condition requires the facility to review and update the SWPPP as appropriate because of proposed changes at the facility. Boilerplate language for SWPPP does not have optional language for requiring facilities to review and update SWPPP.	12/07
Part I.E.	Part I.F.	Renumbered. Updated language to reflect current agency guidance.	12/07

23. Variances/Alternate Limitations or Conditions: None

24. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected, and copied by contacting;

Ms. Jaime Bauer at:
Virginia DEQ Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060
Telephone No. (804) 527-5015
Email Address: jlbauer@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action.

Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. Additional Comments:
Previous Board Action: None.

Staff Comments:

- The permittee submitted a timely application. However, the permit expired. During the reissuance process, the permittee expressed desire to establish an additional outfall (004). For efficiency in the permitting process, DEQ staff elected to administratively continue the permit in lieu of duplicating permit processing efforts for permit reissuance and modification. DEQ is authorized to "administratively continue" the conditions of the expired permit until the issuance of the new permit if the conditions established in 9 VAC 25-31-70 A and B are met.

- In accordance with Section 62.1-44.15:4 D of the State Water Control Law, riparian landowners within a quarter mile upstream and downstream of the proposed discharge at Outfall 004 were notified. The Commissioner of Revenue's office provided names of the property owners on March 26, 2008. Addresses were verified on the Sussex County Property website (www.sussexcountyproperty.com). Three landowners were notified in writing by letter dated March 27, 2008.

- In accordance with Section 62.1-44.15:4 D of the State Water Control Law, localities must be notified of proposed discharges at the time of application receipt. Notification was given to the Sussex County Administrator, Ms. Mary Jones on March 27, 2008. In addition, a copy of the local government ordinance form certified and signed by Ms. Mary Jones for the creation of Outfall 004 was received on April 21, 2008. The LGOF certified that the proposed location and operation of the facility is consistent with all ordinances adopted pursuant to Chapter 22 (Section 15.2-2200 et seq.) of Title 15.2 of the Code of Virginia. The county reportedly mailed the original to the DEQ-PRO, but the original LGOF was never received.

- In accordance with GM 07-2007, screening for impacts to threatened and endangered species from new discharges was conducted via the following agencies: Department of Game and Inland Fisheries (DGIF), Department of Conservation and Recreation (DCR), and United States Fish and Wildlife Service (USFWS). See Attachment 10. In searching the DGIF database, 3 confirmed hits were found for federal or state threatened or endangered species within a two mile radius of the outfall. The Roanoke Logperch, blackbanded Sunfish, and the Roanoke Bass are either federal or state endangered species and confirmed. A search of the USFWS database also identified the Roanoke Logperch. The study maps indicate that the species were confirmed in a waterway near the discharge location, but not in the receiving stream. Also, outfall 004 discharges to a dry ditch therefore no mixing zone is afforded to the discharge and the effluent must meet Water Quality Standards at the end of the pipe. Since the Water Quality Standards are protective of aquatic habitats, the species are not expected to be affected by the discharge. DCR was notified of the proposed outfall addition on July 10, 2008 by phone and by submittal of the project to the DCR Natural Heritage database. In a memo dated July 16, 2008, DCR stated that they had no objections to the permit.

- The application Form 2C for Outfall 004 was sent to the VDH on March 31, 2008. VDH responded with a memo dated April 7, 2008 stating no objection to the permit.

- The facility has maintained performance levels that qualify it for reductions in monitoring

requirements for TSS and pH. To be eligible for these reductions, the permittee did not have VPDES violations which resulted in the issuance of a Warning Letter, issuance of a Notice of Violation, nor was the subject of a new enforcement action. TSS monitoring could be reduced to once per quarter. With issuance of this permit, the facility will be required to meet more stringent TSS limitations due to applicability of an Effluent Guideline Limit. The DMR data from the previous five years indicates that on at least four occasions TSS concentrations were greater than the new limitations. It is the staff's recommendation that the monitoring frequency for TSS not be reduced at this time in order for the facility to demonstrate compliance with the new limitations. pH monitoring should not be reduced as some reported data are within 0.5 units of the lower permit limitations See **Attachment 9**.

Public Comments: No comments received during the public notice period.

26. Attachments:

1. Flow Frequency Memo
2. Facility Diagram
3. Topographic Map
4. Site Inspection Memo
5. (a) Permit Limitation Development – Outfall 001
   (b) Storm Water Permit Limitation Development – Outfalls 002 & 003
   (c) Permit Limitation Development – Outfall 004
6. NPDES Permit Rating Worksheet
7. Groundwater Monitoring Data Analysis
8. Whole Effluent Toxicity Analysis
9. Reduced Monitoring Frequency Evaluation
10. Threatened & Endangered Species Review